

# इंटरनेट

# मानक

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“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 5376 (1969): Dioptric Lenses for Navigational Lanterns  
[TED 19: Marine Engineering and Safety Aids]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”



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# *Indian Standard*

## SPECIFICATION FOR DIOPTRIC LENSES FOR NAVIGATIONAL LANTERNS

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INDIAN STANDARDS INSTITUTION  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 1

# Indian Standard

## SPECIFICATION FOR DIOPTRIC LENSES FOR NAVIGATIONAL LANTERNS

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# *Indian Standard*

## SPECIFICATION FOR DIOPTRIC LENSES FOR NAVIGATIONAL LANTERNS

### 0. F O R E W O R D

**0.1** This Indian Standard was adopted by the Indian Standards Institution on 27 October 1969, after the draft finalized by the Marine Instruments and Safety Aids Sectional Committee had been approved by the Mechanical Engineering Division Council.

**0.2** Dioptric lenses are fitted on all masthead, side and stern lanterns which are required by International Regulations for Preventing Collisions at Sea, for all sea-going power-driven vessels. These lights are required to be visible at a certain minimum distance on a clear dark night.

**0.3** Indian Standard specification for optical glass (IS:1400-1960) is a necessary adjunct to this standard. Besides, this standard requires reference to IS:988-1959\*.

**0.4** This standard generally incorporates the requirements under the Merchant Shipping Act, 1958 and the Rules made thereunder; in addition, specification for dioptric lenses for navigational lanterns as fitted on sea-going vessels is subject to the approval by the Government of India under the said Act and Rules.

**0.5** In the preparation of this standard, assistance has been derived from DIN 89951-1963 Gurtellinsen für Schiffs-Positionslaternen (Lenses for ship's navigation lanterns), issued by Deutscher Normenausschuss, Germany.

**0.6** This is one of a series of Indian Standards on navigational lights. Other standards in the series are:

IS:4601(Part I)-1968 Navigation lights for large sea-going power driven vessels: Part I Positioning and screening of lights

IS:4601 (Part II)-1968 Navigation lights for large sea-going power driven vessels: Part II Oil lanterns

IS:4601 (Part III)- Navigation lights for large sea-going power driven vessels Part: III Electric lamps (*under preparation*)

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\*General requirements for optical components.

**0.7** For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS: 2-1960\*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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## **1. SCOPE**

**1.1** This standard specifies the requirements for dioptric lenses for use on all masthead, side and stern lanterns of sea-going vessels.

## **2. TERMINOLOGY**

**2.1** For the purpose of this standard, the definitions given in IS: 1399-1959† and the following shall apply.

**2.2 Focal Distance**—Focal distance is the distance between the centre of the light source and the inside surface of the dioptric lens (measured at half the length of the lens).

## **3. MATERIAL**

**3.1** The material of the dioptric lens shall be of crown glass.

**3.2** The glass shall be free from colour to the extent that when a white object is viewed through two opposite polished faces of material of 2 cm thickness, the object shall appear unchanged in colour.

**3.3** The glass shall be totally free from cloudiness or milky appearance.

**3.4** The glass shall conform to Grade *A* and Grade *a* specified in clauses **4.6** and **4.7** of IS: 1400-1960‡ respectively, containing no visible striae or cords and also totally free from bubbles of size larger than 0.01 mm in mean diameter.

## **4. DIMENSIONS AND TOLERANCES**

**4.1** The inner surface of the lens shall be cylindrical with a radius of 130 mm for side lanterns and 110 mm for masthead, stern and other lanterns for large power driven sea-going vessels.

**4.2** Lenses with focal distances 95 mm and 70 mm may be used for inland and port vessels.

**4.3** Dimensions and tolerances of dioptric lenses shall be as given in Table 1.

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\*Rules for rounding off numerical values (*revised*).

†Glossary of terms used in optical technology.

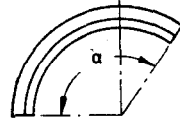
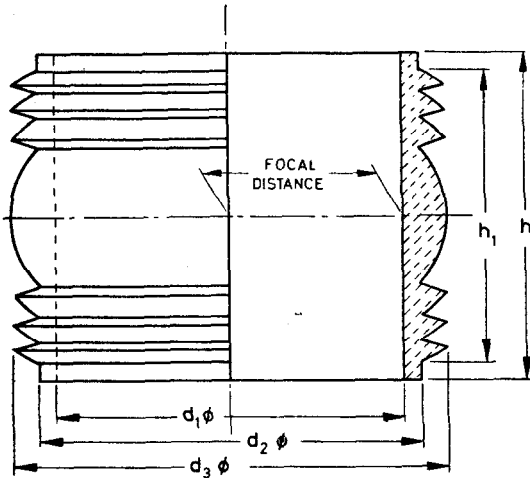
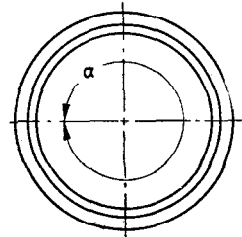
‡Specification for optical glass.



**TABLE 1 DIMENSIONS AND TOLERANCES FOR DIOPTRIC LENSES**

( Clause 4.3 )

All dimensions in millimetres.

**PART LENS****FULL LENS**

FOCAL DISTANCE	ARC OF VISIBILITY		$d_1 \pm 3$	$d_2 +1_0$	$d_3$ Max	$h \begin{smallmatrix} 0 \\ -2 \end{smallmatrix}$	$h_1 +1.5_0$
	$\alpha$ in Degrees	Tolerance in Degrees					
130	125	-1	260	280	312	220	200
	230	-2					
110	140	-1	220	240	270	200	180
	230	-2					
	360						
95	125	-1	190	208	235	178	158
	140	-1					
	230	-2					
	360						
70	125	-1	140	155	180	151	140
	140	-1					
	230	-2					
	360						

## **5. OTHER REQUIREMENTS**

**5.1** The form of the lens shall be such that when a source of light is placed at its centre, the intensity of light is multiplied by at least 2, for all angles between  $5^\circ$  above and  $5^\circ$  below the horizontal; and for angles from 5 to 10 degrees above and below the horizontal, the intensity is multiplied by at least 2 at  $5^\circ$ , decreasing uniformly to at least 0.5 at  $10^\circ$ .

**5.2** The lenses may be optically ground, built-up or other special forms but shall comply with the conditions of this standard.

## **6. WORKMANSHIP**

**6.1** Workmanship shall be of the highest order and conform to IS:988-1959\*.

## **7. DESIGNATION**

**7.1** Dioptric lenses shall be designated by their focal distance, the arc of visibility and the number of this standard.

*Example:*

Dioptric lens of focal distance 110 mm, with an arc of visibility of  $230^\circ$ , shall be designated as:

Dioptric Lens  $110^\circ \times 230^\circ$  IS:5376.

## **8. MARKING**

**8.1** The lenses shall be suitably marked with the manufacturer's name or trade-mark.

**8.1.1** The dioptric lenses may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act, and the Rules and Regulations made thereunder. Presence of this mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard, under a well-defined system of inspection, testing and quality control during production. This system, which is devised and supervised by ISI and operated by the producer, has the further safeguard that the products as actually marketed are continuously checked by ISI for conformity to the standard. Details of conditions, under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

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\*General requirements for optical components.